435321

To: Patricia Flores/R3/USEPA/US@EPA
cc: Debra Rossi/R3/USEPA/US@EPA
ubject: Re: *Maryland Sand Gravel & Stone Indoor Air Modeling Results*

Hi, P: :d calculations for the soil-to-indoor air modeling performed for the MSG: site. Due to time constraints, I *focused on the compounds that appear to be driving inhalation* risks, per model projections. To account for additivity, I defined the risk drivers as compounds with an excess cancer risk of 1E-05 (or greater) or an HQ of 0.1 (or greater):

1,1-Dichloroethene:	cancer risk = 4.1E-04 at Pond 2 cancer risk = 1.2E-05 at the Soil Piles
Benzene:	cancer risk = 2.4E-05 at Pond 2
Chlorobenzene:	HQ = 0.69 at Pond 2 HQ = 1.5 at the Soil Piles HQ = 0.30 at the Soil Staging Area
cis-1,2-Dichloroethene:	HQ = 1.7 at the Soil Piles HQ = 0.23 at the Soil Staging Area
Vinyl Chloride:	cancer risk = 4.7E-05 at the Soil Piles HQ = 0.25 at the Soil Piles

In this regard, I checked the exposure input parameters (averaging time, exposure frequency, and exposure duration) and the toxicity criteria (Unit Risk Factors for carcinogens and Reference Concentrations for non-carcinogens) applied by the model for the predictions of risk, and have the following comments to offer:

- All of the exposure input parameters are appropriate.

- The Unit Risk Factors for 1,1-dichloroethene and benzene are accurate, as is the Reference Concentration for vinyl chloride.

- The Unit Risk Factor used by the model for vinyl chloride (4.4E-06 ug/m3) represents the value suggested for a continuous lifetime exposure during adulthood. In the case of this site and related exposures under a residential scenario, the Unit Risk Factor recommended for continuous lifetime exposure *from birth* (8.8E-06 ug/m3) is more appropriate. Application of the more stringent Unit Risk Factor for vinyl chloride would approximately double the excess cancer risk predicted by the model for this compound.

- The Reference Concentration used in the model for chlorobenzene (2E-02 mg/m3) appears to be incorrect. The Reference Concentration recommended by NCEA for this compound is 6E-02 mg/m3. Use of the NCEA-generated criterion would serve to reduce predicted HQ values by approximately a factor of three.

- I could not verify the Reference Concentration used by the model for cis-1,2-dichloroethene (3.5E-02 mg/m3). To my knowledge, based on a paper produced in 1993 by NCEA, a Reference Concentration could not be derived for this chemical.

That's it. I expect to review the draft Proposed Plan for this site within the next week or two. If you have any questions, please let me know. Thanks.